Claim Amendments

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1-14. (Canceled)

Claim 15. (New) A process for preparing at least one olefin having from 8 to 12 carbon atoms from at least one olefin having from 4 to 6 carbon atoms by means of a four-stage synthesis, which comprises

a) hydroformylating at least one starting olefin to at least one aldehyde product;

b) hydrogenating the at least one aldehyde obtained in step a) to form the corresponding alcohol;

c) preparing at least one 1-olefin by elimination of water from the at least one alcohol obtained in step b); and

d) obtaining at least one olefin by metathesis with elimination of ethylene from the at least one 1-olefin(s) obtained in step c).

Claim 16. (New) The process as claimed in claim 15,

wherein said starting olefin is a mixture of olefins having from 4 to 6 carbon atoms, thereby producing a mixture of olefins having from 8 to 12 carbon atoms.

Claim 17. (New) The process as claimed in claim 15, wherein the hydroformylation reaction is conducted in the presence of a catalyst comprised of rhodium and a triorganophosphorus compound.

Claim 18. (New) The process as claimed in claim 15, wherein the hydroformylation reaction is conducted at a temperature ranging from 70 to 150° C.

Claim 19. (New) The process as claimed in claim 15, wherein the hydrogenation of aldehyde in step b) is conducted in the presence of a catalyst of nickel, copper, copper/nickel, copper/chromium, copper/chromium/nickel, zinc/chromium or nickel/molybdenum.

Claim 20. (New) The process as claimed in claim 15, wherein the hydrogenation of aldehyde in step b) is conducted under a gas phase total pressure 0.5 to 50 MPa.

Claim 21. (New) The process as claimed in claim 15, wherein the hydrogenation of aldehyde in step b) is conducted at a temperature of 120 to 230° C.

Claim 22. (New) The process as claimed in claim 15, wherein the dehydration of the alcohol product of step b) is conducted over a fixed-bed catalyst of an oxide of an alkaline earth metal, of aluminum, of indium, of gallium, of silicon, of scandium, of yttrium, of lanthanum, of titanium, of zirconium, of thorium or of a rare earth metal.

Claim 23. (New) The process as claimed in claim 22, wherein the dehydration of the alcohol product of step b) is conducted over a fixed-bed catalyst of γ-aluminum oxide having a BET surface area 80 to 350 m^2/g.

Claim 24. (New) The process as claimed in claim 15, wherein the dehydration of the alcohol product of step b) is conducted at a temperature ranging from 200 to 500° C.

Claim 25. (New) The process as claimed in claim 15, wherein the elimination of water in the third process step c) is conducted continuously over a solid catalyst which consists formally of aluminum oxide and barium oxide.

Claim 26. (New) The process as claimed in claim 15, wherein said metathesis reaction is conducted over a rhenium catalyst comprising Re_2O_7 on γ-Al_2O_3 or on mixed support material selected from the group consisting of SiO_2/Al_2O_3, $B_2O_3/SiO_2/Al_2O_3$ and Fe_2O_3/Al_2O_3.

Claim 27. (New) The process as claimed in claim 16, wherein a hydrocarbon starting material of step a) comprises isobutene and linear butenes.

Claim 28. (New) The process as claimed in claim 16, wherein said starting hydrocarbon material of step a) is a C_4 fraction selected from the group consisting of raffinate I, a selectively hydrogenated C_4 fraction from a cracker, C_4 fractions from FCC plants or C_4-olefins prepared by the Fischer-Tropsch synthesis.

Claim 29. (New) The process as claimed in claim 28, wherein said C_4 fraction is an industrial C_4 fraction having an isobutene content of greater than 3 % by weight.

Claim 30. (New) The process as claimed in claim 27, wherein 3-methyl-1-butene is separated from the 1-olefin fraction comprising olefins having 5 carbon atoms which is obtained after process step c).